JUNGERSEN *v.* OSTBY & BARTON CO. ET AL.

NO. 7. CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE THIRD CIRCUIT.*

Argued November 10, 1948.—Decided January 3, 1949.

1. All of the claims of Jungersen Patent No. 2,118,468, for a "method of casting articles of intricate design and a product thereof," *held* invalid for want of invention. Pp. 561–568.
2. An examination of the prior art as it existed at the time of this alleged invention reveals that every step in the Jungersen method was anticipated; and it appears that Jungersen's combination of these steps was, in its essential features, also well known in the art. Pp. 563–564.
3. Where centrifugal force was common as a means of introducing molten metal into a secondary mould, its use in an intermediate step to force molten wax into a primary mould was not an exemplification of inventive genius such as is necessary to render a patent valid. Pp. 564–567.
4. It is not sufficient to say that jewelry casting is a separate and distinct art where the patent is not restricted to the casting of jewelry and the prior improvements in the art of casting were so obviously applicable to the casting of jewelry that the patentee was bound by knowledge of them. P. 567.
5. Where invention is plainly lacking, the fact that a process has enjoyed considerable commercial success does not render a patent on it valid. Pp. 567–568.

163 F. 2d 312, affirmed in part and reversed in part.
166 F. 2d 807, affirmed.

Nos. 7 and 8. In a suit for a declaratory judgment that a patent was invalid and not infringed, defendant counterclaimed, alleging infringement and seeking an injunction. The District Court held certain claims valid but not

*Together with No. 8, *Ostby & Barton Co. et al.* v. *Jungersen*, on certiorari to the United States Court of Appeals for the Third Circuit, and No. 48, *Jungersen* v. *Baden et al.*, on certiorari to the United States Court of Appeals for the Second Circuit.

infringed and certain other claims invalid. 65 F. Supp. 652. The Court of Appeals affirmed. 163 F. 2d 312. This Court denied petitions of both parties for certiorari, 332 U. S. 851, 852; but, after a conflicting decision in another circuit in No. 48, vacated those orders and granted certiorari. 334 U. S. 835. No. 7 *affirmed* and No. 8 *reversed,* p. 568.

No. 48. In a suit for damages, profits and injunctive relief for alleged infringement of a patent, the District Court held all claims of the patent invalid. 69 F. Supp. 922. The Court of Appeals affirmed. 166 F. 2d 807. This Court granted certiorari. 334 U. S. 835. *Affirmed,* p. 568.

William H. Davis argued the cause for Jungersen. With him on the brief was *George E. Faithfull.*

John Vaughan Groner argued the cause for Ostby & Barton Co. et al. With him on the brief was *Edward Winsor.*

MR. JUSTICE REED delivered the opinion of the Court.

The issue here is the validity of United States Patent No. 2,118,468 which covers a "method of casting articles of intricate design and a product thereof."

The patent was granted to Jungersen on May 24, 1938. In 1941, Ostby and Barton Company instituted in the United States District Court for the District of New Jersey an action for a declaratory judgment that the patent was invalid and not infringed. Jungersen, by counterclaim, alleged infringement and sought an injunction. The District Court held Claims 1–4 valid but not infringed and Claims 5–6 invalid because too broad. 65 F. Supp. 652. The United States Court of Appeals for the Third Circuit affirmed on the reasoning of the District

Court. 163 F. 2d 312. We denied petitions by both parties for certiorari. 332 U. S. 851, 852.

In 1944, Jungersen filed suit against Baden in the United States District Court for the Southern District of New York, in which he alleged infringement of the patent and sought damages, profits, and injunctive relief. That court held all the claims invalid. 69 F. Supp. 922. The United States Court of Appeals for the Second Circuit affirmed. 166 F. 2d 807.

Vacating the prior orders which denied it in the Ostby and Barton proceeding, we granted certiorari in both cases in order to settle the conflict. 334 U. S. 835.[1] Since the parties do not assert error in those portions of the lower courts' decisions which concern infringement, the sole issue before us is the validity of the patent.

The method described in the Jungersen patent, Claims 1–4, consists of the following steps: (1) the production of a model of the article to be cast, (2) the formation around this model of a "primary mould" of plastic material "such as rubber" which is "capable of assuming intimate contact with the intricate designs of the model" and which will "retain a lasting shape through subsequent treatment," (3) the casting in this mould of a pattern consisting of molten wax or other material of a low melting point which is made to assume the minute configurations of the mould by means of centrifugal force, (4) the removal of this pattern (which has become solid upon cooling) from the primary mould, and the formation around it of a "secondary mould" of refractory material, such as plaster of Paris, which "will assume all the contours of its intricate design," (5) the removal

[1] In No. 7 we are asked to consider the decision of the Court of Appeals for the Third Circuit as to claims 5 and 6; in No. 8, the decision of that court as to claims 1 through 4; and in No. 48, the decision of the Court of Appeals for the Second Circuit as to all the claims of the patent.

of the wax or similar material from the secondary mould, or "investment" as it is called, by the application of heat, thus melting it out, and finally (6) the casting of the desired molten metal into the cavity in the investment by the application of centrifugal force as in (3), above.

This method is capable of producing "small metal articles, particularly articles of intricate detail such as jewelry which frequently are designed with hollows, undercut portions and perforations, so that they will have a smooth clean surface faithful in detail to the original and free from imperfections or holes, and to enable such result being accomplished with the minimum of expense." The patentee claims that it made possible the accurate reproduction of intricate designs in far less time than had previously been required.

Claim 5 describes in more general terms the formation of a primary mould around the original pattern, the removal of the pattern from the mould, the introduction of molten wax into the mould "by force sufficient to deposit the material into the depression or depressions of the primary mould" and the employment of the wax pattern for the manufacture of a casting mould. Claim 6 covers "an article of jewelry" of intricate design made by the process disclosed by Claim 5. It describes the article of jewelry only by reference to the process by which it is manufactured. Obviously if the first four claims are invalid, the last two must likewise fall.

An examination of the prior art as it existed at the time of this alleged invention reveals that every step in the Jungersen method was anticipated. We think that his combination of these steps was, in its essential features, also well known in the art.

Jungersen's process is nothing more than a refinement of a method known as the "cire perdue" or "lost wax" process, which was in use as early as the sixteenth cen-

tury.[2] The *Treatises of Benvenuto Cellini on Goldsmithing and Sculpture,* pp. 87–89, reveals a process which consists of filling a primary mould with molten wax, building a secondary mould around the wax model thus obtained, melting the wax from this mould and pouring the desired metal in the secondary mould. In 1904 United States Patent No. 748,996, issued to Spencer, described a substantially identical process in which the primary mould was made, as in the patent here involved, by vulcanizing rubber around the original model or pattern. In England a process similar to Spencer's had been the basis of a patent issued to Haseltine in 1875.[3]

The above-described developments in the prior art suggested no limitation of their applicability to any particular type of casting. Spencer stated that the purpose of his process was to produce accurate replicas of the original pattern, which could be of "intricate form" and which could "have any number of sides or surfaces or undercut or projecting parts." Haseltine described his object as the production of "a casting in metal from a given pattern, which casting will be a perfect copy of such pattern without requiring much, if any, after finishing or chiselling work."

The patentee claims that the invention in his combination lies in the use, in conjunction with the "lost wax" process, of centrifugal force. Long before the issuance of this patent, however, those skilled in the art recognized and disclosed the necessity for the application of force in order to make molten materials fit snugly the

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[2] 20 Encyclopaedia Britannica (1948), p. 229.

[3] British Patent No. 2467.

[4] A French publication by Verleye entitled "La Gravure, etc." (1924) describes in detail all of the elements of Jungersen's process except the use of centrifugal force.

intricate details of the mould. Haseltine applied pressure of about twenty pounds per square inch to cause the molten metal "to lie to the dense mould and produce a sharp and well defined casting." He accomplished this by introducing the metal into the mould through a pipe about six feet in height.[4] United States Patent No. 1,238,789 issued to Kralund in 1917 teaches the application of pressure to the wax and the molten metal by means of an ordinary pressure die casting apparatus.

Whether these types of pressure are the equivalent of centrifugal force we need not decide since it is evident from patents and publications that the use of the latter was well known in the art. In 1923 McManus patented a casting machine which was adapted "to the casting of jewelry, such as gold rings, small trinkets, etc., where metal or other dies or moulds may be . . . filled by centrifugal casting methods." United States Patent No. 1,457,040. He claimed "a means for transferring fused material from the furnace [in which the material was melted] to the mould under the action of centrifugal force." In a paper on current casting methods which he presented to the Institute of Metals in England in 1926, one George Mortimer, with reference to the difficulty in filling a mould by gravity, stated:

> "It was natural, therefore, that engineers should early turn their attention to some form of artificial pressure, whereby the mould could be filled by force, and soundness and clean definition seemingly assured.
>
> "The simplest form of artificial pressure is that of centrifugal force . . . ." [5]

[4] "La Gravure, etc.," *supra*, note 3, advocates the use of steam pressure.

[5] 35 Journal of the Institute of Metals, 371, 377.

Centrifugal force was commonly used in dental casting prior to 1938.[6]

Thus it is clear that the "lost wax" process, the use of a flexible primary mould, and the use of centrifugal force were all old in the art of casting. The patentee claims that the centrifugal forcing of wax into the primary mould had never before been combined with the other features of his process. We think this fact is of no legal significance. Where centrifugal force was common as a means of introducing molten metal into the secondary mould, its use in an intermediate step to force molten wax into the primary mould was not an exemplification of inventive genius such as is necessary to render the patent valid. Cf. *Lincoln Engineering Co.* v. *Stewart-Warner Corp.*, 303 U. S. 545; *Cuno Engineering Corp.* v. *Automatic Devices Corp.*, 314 U. S. 84. The patentee himself admitted that the same principle was employed in both steps.[7] Thus Jungersen employed in his claimed invention well-known skills and practices in a manner and

[6] "Dental-casting methods employ four distinct principles; namely, gravity, centrifugal, vacuum, and pressure. . . .

"The centrifugal method has the advantage of great simplicity, and fills the mold by the force exerted in throwing the metal off on a tangent while being revolved about a center." Stern, Die-casting Practice (1st ed., 1930), p. 10.

[7] An excerpt from the testimony follows:

"Q. And when the machine is revolved, when it is centrifuged, it makes no difference whether it be molten wax or molten metal, does it, in the fact that it throws out the molten material into the gate? A. It would throw out anything of weight if it is made free to leave.

"Q. And that applies to wax as well as metal, does it not? A. It applies to wax and metal, but in a greater amount to the metal than to the wax.

"Q. But they both operate in the same way under the influence of the centrifugal machine? A. The same principle is used, yes.

"Q. And the molten material in both cases is introduced into the mold? A. Yes."

for a purpose long familiar in the field of casting. His claimed improvement is therefore not patentable.

The patentee contends, however, that jewelry casting is a separate and distinct art; that consequently the advancements in other types of casting mentioned above cannot be viewed as the prior art in reference to this patent. The answer to this is twofold. In the first place, this patent is not restricted to the casting of jewelry. Its stated object is to "facilitate the casting of small metal articles, particularly articles of intricate detail such as jewelry . . . ." Secondly we think that the improvements in the art of casting which were disclosed by the patents and publications discussed above were so obviously applicable to the type of casting sought to be effected by Jungersen that he was bound by knowledge of them. *Mandel Bros.* v. *Wallace,* 335 U. S. 291, 295–96.

Numerous licenses under the patent were issued in the United States and other countries. The fact that this process has enjoyed considerable commercial success, however, does not render the patent valid. It is true that in cases where the question of patentable invention is a close one, such success has weight in tipping the scales of judgment toward patentability. *Goodyear Tire & Rubber Co.* v. *Ray-O-Vac Co.,* 321 U. S. 275, 279, and cases cited in footnote 5 thereof. Where, as here, however, invention is plainly lacking, commercial success cannot fill the void. *Dow Chemical Co.* v. *Halliburton Co.,* 324 U. S. 320, 330; *Toledo Pressed Steel Co.* v. *Standard Parts, Inc.,* 307 U. S. 350, 356–57; *Textile Machine Works* v. *Hirsch Co.,* 302 U. S. 490, 498–99; 1 Walker, Patents (Deller, 1937) § 44. Little profit would come from detailed examination of the cases cited above or those indicated by reference. Commercial success is really a makeweight where the patentability question is close.

Increased popular demand for jewelry or alertness in exploitation of the process may well have played an important part in the wide use of the patent. We cannot attribute Jungersen's success solely or even largely to the novelty of his process.

We hold all the claims of the patent invalid for want of invention.

Nos. 7 and 48 *affirmed.*
No. 8 *reversed.*

MR. JUSTICE FRANKFURTER, with whom MR. JUSTICE BURTON joins, dissenting.

This is not one of those patent controversies that carry serious consequences for an important industry and thereby for the general public. The case does, however, raise basic issues regarding the judiciary's role in our existing patent system. These issues were stated by Judge Learned Hand when the litigation was before the Court of Appeals for the Second Circuit. Since this Court's opinion has not, to my mind, met the questions which he raised, and since I cannot improve upon what Judge Learned Hand wrote, I adopt his opinion as mine.

> "In Jungersen's British patent, as my brothers truly say, he based his invention solely upon forcing the wax and the metal into completely intimate contact with every crevice of the mould, and for this he disclosed a centrifuge as the means. Moreover, it had already been known by other moulders of fine patterns that the metal might not fill all the spaces necessary for perfect reproduction. For example, in 1873 Haseltine disclosed a device which set up a pressure of twenty pounds to the square inch; and this too in a 'lost wax' process. True, he did not disclose using similar pressure for the wax, and he did not use a centrifuge; but McManus used a cen-

trifuge to force fusible metal into all the crevices of the mould, and that too in a 'lost wax' process, the knowledge of which he appears to have assumed, for he does not disclose how to make the wax model. Kralund also showed a pressure die-casting process, as applied to the 'lost wax' method; and he used pressure to force his wax into intimate connection with the first die as well as upon the molten metal of the final casting: but his original die was of steel and he does not describe its manufacture.

"Nevertheless, in spite of all these approaches, and of the fact that all the elements of the disclosure were to be found in the prior art, it remains true that Jungersen's process in its entirety had never been assembled before; no one had ever thought of combining all those steps in a single sequence. True, had the combination not been new in this objective sense, it could not have been patented merely by turning it to a new use; and that would have been so, although it might have taken as much originality to see that it could be put to the new use, as it takes to make an outstanding invention. It would have been a final answer that Congress has never seen fit to extend its constitutional power to 'discoveries' as such, and has limited patents to an 'art, machine, manufacture, or composition of matter,'[1] as we have often said—the last time in Old Town Ribbon & Carbon Co., Inc., v. Columbia Ribbon & Carbon Manufacturing Co.[2] My point is that, if there is a new combination, however trifling the physical change may be, nothing more is required than that, to take the step or steps, added 'invention,' is needed; and 'invention,' whatever else it may be, is within

[1] § 31, Title 35 U. S. C. A.

[2] 2 Cir., 159 F. 2d 379, 382.

the category of mental activities and of those alone. In the case at bar the answer must therefore depend upon how we shall appraise the departure from what had gone before in terms of creative imagination; indeed, I do not understand what other test could be relevant.

"If that be the test, I submit that Jungersen's process meets it. From time immemorial jewelry had been manufactured by the earlier processes; so that the need, if need there was, had existed for years. Moreover, two of those earlier processes—'cuttlefish casting and sand-casting'—have now become 'of little commercial significance'; 'die-stamping' and Jungersen's process 'are the only substantial methods now commercially used'; and in the manufacture of a hundred rings or less 'die-stamping' is more expensive. Had some technological advance held up the change, and had Jungersen made it only a short time after the obstacle had been removed, I should agree that the inference of outstanding originality would have been greatly weakened; but that was not the fact. Indeed, it is the very basis of the defence that for years all the elements lay open and available, and that nothing was needed but the paltry modification which has proved so fruitful. To that I make the answer on which courts in the past used to ring the changes with wearisome iteration. If all the information was at hand, why was the new combination so long delayed? What better test of invention can one ask than the detection of that which others had all along had a strong incentive to discover, but had failed to see, though all the while it lay beneath their eyes? True, the whole approach to the subject has suffered a shift within the last decade or so, which I recognize that

we should accept as authoritative. Moreover, I am not aware of the slightest bias in favor of the present system; I should accept with equanimity a new system or no system. However, I confess myself baffled to know how to proceed, if we are at once to profess to apply the system as it is, and yet in every concrete instance we are to decide as though it did not exist as it is. In the case at bar, I can only say that, so far as I have been able to comprehend those factors which have been held to determine invention, and to which at least lip service continues to be paid, the combination in suit has every hall-mark of a valid patent."

Judge Hand's opinion is reported at 166 F. 2d 811.

MR. JUSTICE JACKSON, dissenting.

I think this patent meets the patent statute's every requirement. And confronted by this record an industry heretofore galled by futility and frustration may well be amazed at the Court's dismissal of Jungersen's ingenious and successful efforts.

Of course, commercial success will not fill any void in an invalid patent. But it may fill the void in our understanding of what the invention has meant to those whose livelihood, unlike our own, depends upon their knowledge of the art. Concededly, in this high-pressure age sales volume may reflect only powerful promotion or marketing magic, and its significance as an index of novelty or utility may rightly be suspected. But Jungersen's success was grounded not in the gullibility of the public but in the hard-headed judgment of a highly competitive and critical if not hostile industry. Knowing well its need for and its failure to achieve improvements on available processes, that industry discarded them, adopted this outsider's invention, and made it a commercial success.

It would take a singular self-assurance on the part of one who knows as little of this art as I do, or as I can learn in the few hours that can be given to consideration of this case, to ignore the judgment of these competitors who grew up in the industry and say that they did not know something new and useful when they saw it. And if Benvenuto Cellini's age-old writings are so revealing to us laymen of the appellate Bench, it is hard to see why this practical-minded industry which the Court says was following Cellini failed through all the years to get his message.

It would not be difficult to cite many instances of patents that have been granted, improperly I think, and without adequate tests of invention by the Patent Office. But I doubt that the remedy for such Patent Office passion for granting patents is an equally strong passion in this Court for striking them down so that the only patent that is valid is one which this Court has not been able to get its hands on.

I agree with the opinion of Judge Learned Hand below.